ENVIRONMENTAL PROTECTION AGENCY

Sole Source Aquifer Designation of the Central Pierce County Aquifer System, Pierce County, Washington

AGENCY: U.S Environmental Protection Agency

ACTION: Final Determination

SUMMARY: Pursuant to Section 1424(e) of the Safe Drinking Water Act, the Region 10 Administrator of the U.S. Environmental Protection Agency (EPA) has determined that the Central Pierce County Aquifer System is the principal source of drinking water for the designated area, and that the aquifer system, if contaminated, would create a significant hazard to public health. As a result of this determination, all federal financially-assisted projects proposed in the designated area will be subject to EPA review to ensure that they do not create a significant hazard to public health.

EFFECTIVE DATE: This determination shall be promulgated for purposes of judicial review at 1:00 Eastern time on [insert date two weeks after date of publication in the FEDERAL REGISTER].

ADDRESSES: The information upon which this determination is based is available to the public and may be inspected during normal business hours at the main and satellite branches of the Pierce County Library System, and at the EPA Library, 10th Floor, Park Place Building, 1200 Sixth Avenue, Seattle, Washington, 98101.

FOR FURTHER INFORMATION CONTACT: Scott E. Downey, Environmental Protection Specialist, Ground Water Section, WD-133, U.S. Environmental Protection Agency, Region 10, 1200 Sixth Avenue, Seattle, Washington, 98101, 206-553-0682.

SUPPLEMENTARY INFORMATION: Notice is hereby given that pursuant to Section 1424(e) of the Safe Drinking Water Act (42 United States Code, 300f, 300h-3(e), Public Law 93-523), the Region 10 Administrator of U.S. Environmental Protection Agency has determined that the Central Pierce County Aquifer System is the principal source of drinking water for the designated area, and that the aquifer system, if contaminated, would create a significant hazard to public health. As a result of this determination, federal financially-assisted projects proposed in the designated area will be subject to EPA review to ensure that they do not create a significant hazard to public health.

The information upon which EPA is issuing this final determination has been summarized in the "Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System", EPA 910/R-93-001, prepared by the EPA Region 10 Ground Water Section.

I. Background

Section 1424(e) of the Safe Drinking Water Act states:

> If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the FEDERAL REGISTER. After the publication of any such notice, no commitment for federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for federal assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

EPA defines a sole or principal source aquifer as one which supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. Current EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all EPA designated sole or principal source aquifers are usually referred to simply as "sole source aquifers". Although EPA has the statutory authority to initiate sole source aquifer designations, the Agency has a longstanding policy of acting only in response to petitions. These petitions may be submitted to EPA by any individual or organization and must document and meet all designation criteria as outlined in the "Sole Source Aquifer Designation Petitioner Guidance", EPA 440/6-87-003.

On June 23, 1987, EPA Region 10 received a sole source aquifer petition from the Tacoma-Pierce County Health Department (TPCHD). The petition requested EPA designation of the "Clover/Chambers Creek Aquifer", an area of approximately 144 square miles of central Pierce County in the State of Washington. On July 29, 1987, EPA requested additional information from the

TPCHD. A revised petition was submitted on February 1, 1988. On February 24, 1988, EPA sent the TPCHD a letter which acknowledged that the petition was considered complete, and that the technical review phase would begin.

EPA guidance allows sole source aquifer designations to be delineated for an entire aquifer, an aquifer system, or part of an aquifer that is hydrogeologically separated from the rest of the aquifer. The EPA Region 10 technical review determined that the petitioned Clover/Chambers Creek area was not an entire aquifer or a hydrogeologically separate unit of an aquifer but was located within a larger aquifer system. Thus, the boundaries were extended to those now designated. On July 25, 1988, the TPCHD provided EPA with drinking water consumption estimates for the larger area.

II. Basis for Determination

Pursuant to Section 1424(e), the EPA Regional Administrator has determined that the Central Pierce County Aquifer System is the principal drinking water source for the area, and which, if contaminated, would create a significant hazard to public health. Based on the information available to this Agency, the Regional Administrator has made the following findings which are the bases for the determination noted above:

1. The Central Pierce County Aquifer System supplies approximately 60 percent of the average drinking water demand for the area, and approximately 84 percent of the peak drinking water demand for the area.
2. No alternative source or combination of sources can physically, legally, and economically supply all those who depend upon the aquifer system for drinking water.
3. Based upon these two findings, contamination of the Central Pierce County Aquifer System would create a significant hazard to public health.

III. Description of the Central Pierce County Aquifer System

Note: Some information in this section represents an unfootnoted summary from the "Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System", EPA 910/R-93-001, prepared by the EPA Region 10 Ground Water Section.

The EPA technical review determined that the Central Pierce County Aquifer System consists primarily of unconsolidated sediments deposited by glaciers and associated meltwater during the Quaternary Period. Ground water originates almost entirely as precipitation upon the land surface. Recharge to the aquifer

system is greatest where the precipitation falls on permeable glacial outwash sediments such as sand or gravel. The ground water moves regionally toward the Puget Sound and river valleys that constitute the aquifer system boundaries. Locally, the direction and gradient of ground water movement can vary dramatically from the overall regional trend.

Depth to ground water varies from zero to hundreds of feet. The greatest depth to ground water occurs in recharge areas where the unsaturated zone is composed of highly permeable glacial outwash materials. Ground water occurs at or near the land surface in discharge areas and where materials with low permeability, such as glacial till (an unsorted assemblage of clay, silt, sand, pebbles, cobbles, and/or boulders), restricts recharge during the wet season. Seasonal variations in water table elevations of 20 to 30 feet have been observed in some parts of the aquifer system.

Deep wells drilled within the area penetrate multiple productive aquifers of permeable glacial outwash separated by relatively impermeable aquitards of glacial till or non-glacial sediments. The degree of hydrologic connection between individual aquifer units can vary greatly. Ground water discharge occurs to surface water bodies and wetlands within the area (which can also recharge the ground water system), and to surface water bodies which bound the area. Ground water from the aquifer system is naturally low in dissolved solids and can be used for drinking, irrigation, and most industrial purposes without treatment.

The natural sensitivity of the aquifer system to contamination is influenced by the permeability of geologic materials that overlie and occur within the aquifer system, the amount of recharge from precipitation, and the depth to ground water. The potential for contamination is greatest where sediments are permeable, recharge is high, and ground water is shallow.

The relative vulnerability of ground water to contamination also increases from various human activities which provide the opportunity for anthropogenic sources of contamination to enter the system. Subsurface disposal of waste and wastewater is the chief threat to ground water quality over much of the aquifer system. The Tacoma-Pierce County Health Department has identified individual and community septic systems, the subsurface disposal of urban stormwater, and solid waste landfills as principal concerns. Although concentrations of nonpoint contaminants (such as nitrate and chloride) are still

generally below drinking water standards, they have increased significantly over time throughout parts of the aquifer system. Man-induced contamination which has exceeded drinking water standards has been documented is some industrial and commercial areas. Several of these areas have been selected for expensive clean-up under the federal Superfund program.

The sole source aquifer boundaries selected by EPA are primarily surface water boundaries located in lowland areas that have eroded downward through aquifer system glacial materials and which receive discharging ground water from the aquifer system. The Puget Sound forms the western boundary of the aquifer system. The Puyallup River forms the northern boundary and also the eastern boundary as far south as the Town of Electron (just northeast of Lake Kapowsin). South of Electron, the eastern boundary follows the ancestral Puyallup River Valley which is now occupied by Lake Kapowsin, Ohop Lake, and Ohop Creek. The Nisqually River forms the southern boundary of the aquifer system from its intersection with Ohop Creek downstream to the Puget Sound.

The petitioner estimates that about 400,000 people live within the aquifer system boundaries or in nearby areas which at least partly utilize ground water from the system. Ground water generally supplies about 60 percent of the drinking water used within the designated area. During peak demands, ground water supplies over 80 percent of the drinking water consumed with the area. The petitioner and EPA have determined that although alternative sources of drinking water are physically available, they cannot legally and economically serve all those who now depend upon the aquifer system.

IV. Project Reviews

Designation of a sole source aquifer authorizes EPA to review, at the Agency's discretion, federal financially-assisted projects proposed within the designated area. The principal mechanism used by EPA Region 10 to identify projects for review are Memorandums of Understanding (MOUs) with federal funding agencies. These MOUs stipulate procedures for screening and referring projects to EPA in order to ensure that only projects which may have a significant impact to ground water quality are reviewed. Should the EPA Administrator determine that a project may contaminate an aquifer through its recharge zone so as to create a significant hazard to public health, no commitment for federal financial assistance may be entered into.

EPA also learns of and coordinates the review of proposed projects with other offices within EPA and with various federal,

state, local, and tribal agencies that have a responsibility for ground water quality protection. Information obtained from such sources is given full consideration in the sole source aquifer review process. Through such coordination, EPA project reviews can complement, support, and strengthen existing ground water protection mechanisms.

V. Public Comments

In order to obtain public comments on the proposed designation, EPA issued a public notice which was published in the Morning News Tribune on April 22, 1993. The notice was also distributed by mail to numerous federal, state, and local officials. The notice stated that 1) EPA was proposing to designate the Central Pierce County Aquifer System as a sole source aquifer based on the petition from the TPCHD and the EPA review; 2) a public hearing would be held if sufficient interest were expressed to EPA by May 25, 1993; 3) a public comment period would remain open until June 15, 1993; and 4) a document that summarized the bases for the proposal was available for review. EPA also issued a press release with similar information on April 23, 1993.

EPA did not receive any requests to hold a public hearing before the period expired and the hearing was cancelled. Three written comments were received by EPA prior to the June 15, 1993 deadline. A letter from the Washington Department of Ecology, Ground Water Quality Unit Supervisor, expressed support for the designation. A letter from the U.S. Department of the Interior, Bureau of Reclamation, Pacific Northwest Regional Director, documented a review of the support document and offered no additional comment.

A letter received on June 11, 1993 from the Chair of the Tacoma-Pierce County Board of Health offered support for the designation, but also requested a 30 day extension of the public comment period and EPA participation in an informational meeting to hear concerns from interested parties about the impacts of the designation on the community. In response to this request, EPA issued a second public notice on June 18, 1993 that extended the public comment period until July 19, 1993.

Two additional letters were received during the second public comment period. A member of the Washington Department of Ecology, Ground Water Quality Unit, offered support for the designation and requested additional information on the hydrogeologic analyses which led to the revision of the originally-petitioned boundary. This information was provided to the Unit Supervisor by a Region 10 Ground Water Section

hydrogeologist. A letter from the Tacoma Public Utilities, Water Division Superintendent, stated support for the designation citing the increase in public awareness about the importance and vulnerability of this ground water resource.

In response to the Tacoma-Pierce County Board of Health letter of June 11, 1993, EPA participated in an informational meeting in Tacoma on July 14, 1993. At the meeting, an EPA representative presented an overview of the sole source aquifer program and outlined the Agency's technical review process and basis for selecting the boundaries. Some participants raised questions regarding EPA's determination of aquifer system boundaries. In response, the boundaries selected by EPA are primarily surface water boundaries which act as regionally important ground water discharge areas for aquifer system materials. A detailed description of aquifer system boundaries and the reasons for their selection can be found in the "Support Document for Sole Source Aquifer Designation of the Central Pierce County Aquifer System", EPA 910/R-93-001.

A number of persons at the meeting expressed economic concerns about the designation, some contending that EPA's review authority could hinder economic development by blocking or delaying proposed projects. In response, sole source aquifer designations are not based on economic criteria other than the potential cost of alternative drinking water supplies needed to replace the petitioned aquifer should it become contaminated, i.e, economic impacts from post-designation project reviews are not relevant in the Agency's designation decision.

Regardless, based on past experience, EPA considers fears about dire economic impacts from sole source aquifer project reviews to be largely unfounded. Under the sole source aquifer program, EPA has the authority to review only federal financially-assisted projects proposed over a designated aquifer area. Of these, only those projects with the potential to create a significant hazard to public health have typically been referred to EPA for review. The majority of these reviews have resulted in an approval of funding without any project modification. When EPA has required changes, project proponents seeking federal financial assistance have usually been willing and able to modify projects in order to protect ground water quality. To date, since Region 10's first sole source aquifer designation in 1978, only one project proponent has been either unwilling or unable to modify the project design in order to receive EPA approval of federal funding.

EPA acknowledges that ground water quality protection measures may increase costs to a project or cause delays if modifications are required. Increased project costs or significant delays due to EPA reviews are not common because most projects are already designed in accordance with existing standards established by federal, state, or local entities, and such standards are often adequate. Involving EPA early on in the planning and design phases of a project greatly facilitates a more timely and efficient review, and increases the likelihood of EPA approval without modification. Where EPA requires project modifications, the Agency believes that such measures represent an investment that will pay for itself many times over. The high cost of replacing contaminated drinking water supplies or cleaning up polluted ground water (when possible) underscores the wisdom of taking steps to prevent or reduce the possibility of contamination from occurring in the first place.

VI. Summary

Today's action affects only the Central Pierce County Aquifer System located in the State of Washington. This action provides a review process that allows ground water quality protection measures to be incorporated into federal financially-assisted projects.

Dated:

_____

Gerald A. Emison,
Acting Regional Administrator,
U.S. Environmental Protection Agency, Region 10.